

This listing of claims will replace all prior versions, and listings, of the claim in the application:

Listing of Claims:

1. (Currently amended) Blasting method for open mines and excavations, comprising using an array of onion-shaped drill holes called "onion drill holes" having a cylindrical upper portion and ~~an onion-like~~ a close-to-spherical lowermost portion called "onion", which blasting method comprises:

(a) Drilling an array of cylindrical drill holes each having a bottom portion in a site that is to be blasted;

(b) For each of the cylindrical drill holes, performing the steps of:

b.1) ~~Imparting an onion shape to the bottom portion of~~
Filling the bottom portion of said cylindrical drill hole with an initial explosive charge, and detonating it, thereby creating a close-to-spherical cavity at the bottom portion of the drill hole and thus imparting an onion shape to the drill hole;

b.2) Filling the said onion with a primary explosive charge wherein said initial explosive charge is much smaller than said primary explosive charge;

b.3) Filling a first portion of the drill hole, above said primary explosive charge, with buffer

material;

b.4) Filling a second portion of the drill hole, above said buffer material, with a secondary explosive charge;

b.5) Filling a third portion of the drill hole with additional buffer material; and

(c) Simultaneously detonating said primary and secondary explosive charges , said close-to-spherical cavity causing a blasting impact from detonation of the primary explosive charge to be directed essentially evenly to all spatial directions radially outwardly from the center of said cavity, thereby pulverizing the rock mass surrounding the onion, and disintegrating rocks at the surface area above said onions.

2. (Currently amended) Method according to claim 1, wherein ~~imparting the onion-like shape to the bottom portion of a drill hole is performed by:~~

~~(a) Filling the bottom portion of a cylindrical drill hole with initial explosive charge, which said initial explosive charge is relatively small with respect to the primary explosive charge, but is large enough to impart to the bottom of the drill hole the onion-like onion shape; and~~

~~(b) Detonating the initial explosive charge.~~

3. (Currently amended) Method according to claim 21,

wherein the bottom portion of the cylindrical drill hole, which is filled with the initial explosive charge, is preferably between 3% to 5% of the total depth of the cylindrical drill hole.

4. (Currently amended) Method according to claim 21, wherein ~~imparting the onion-like shape to~~ said creating a close-to-spherical cavity at the bottom portion of the drill hole further includes utilization of initial stemming for stemming the opening of the drill hole before detonating the initial explosive charge.

5. (Cancelled)

6. (Currently amended) Method according to claim 1, wherein all of the drill holes are drilled to the same depth, which is between 80% to 90% of the depth of the layer of a rock or soil to be blasted called the "Bench Height".

7. (Original) Method according to claim 1, wherein the depth of the drill holes is approximately 13 meters, the diameter of the cylindrical portions is approximately 8 inches, and the lengths of the first, second and third portions of the drill hole are approximately 7.8m, 1.95m and 1.95m, respectively.

8. (Currently amended) Method according to claim 51, wherein the length of the onion is preferably between 8% to 11% of the total depth of the drill hole, its ~~maximum~~ diameter is approximately ~~1.00~~ meter, and wherein said ~~onion is filled with a primary explosive charge, the weight~~

~~of which ranges~~ weighs between 800 and 1,250 kilograms.

9. (Original) Method according to claim 1, wherein the array of drill holes comprises essentially parallel rows of drill holes; the spacing between each two adjacent drill holes in the same row being approximately 18 meters, and the spacing between each two adjacent rows being approximately 16 meters.

10. (Cancelled)

11. (Cancelled)

12. (Original) Method according to claim 1, wherein the relative lengths of the first, second and third portions are approximately 60%, 15% and 15%, respectively, of the overall depth, or length, of the drill holes.

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)